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STMICROELECTRONICS, INC.
MAIL STATION 2346
1310 ELECTRONICS DRIVE
CARROLLTON, TX 75006

EXAMINER	
RODRIGUEZ, GLENDA P	

ART UNIT	PAPER NUMBER
2627	

DATE MAILED: 07/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/993,869	OZDEMIR, HAKAN
	Examiner	Art Unit
	Glenda P. Rodriguez	2627

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 May 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3 and 5-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *8 and 18* is/are allowed.

6)☒ Claim(s) *1-3, 5-17, 19-34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 2, 4, 6, 7, 20, 21, 29, 30 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tuttle et al. (US Patent 6, 108, 151) in view of Moran et al. (US Patent No. 6, 738, 205).

Regarding Claim 1, Tuttle et al. teach a servo circuit, comprising:

> A servo channel operable to recover servo data from servo wedges that identify respective data sectors on a data-storage disk (Tuttle et al. teaches a read channel that detect servo data, therefore the channel is a servo/data channel.); and
>
> A processor coupled to the servo channel and operable to detect a first spin-up wedge associated with a first one of the servo wedges and then to detect the first servo wedge while the disk is attaining or after the disk attains an operating speed and before the servo channel detects any other servo wedge (Col. 4, L. 29-56 and Col. 15, L. 15-63, wherein Tuttle et al. teaches detecting an asynchronous servo wedge during the spin up operation (hence, it is detecting it "while the disk is attaining an operating speed" as described in the Claim). It is known in the art that the servo contains data that pertains to the location of the head with respect to the disk. Tuttle further teaches that when the disk attains its operating seed, it

detects the wedges synchronously. Tuttle further teaches a servo controller as shown in Fig. 14, Element E162, wherein it detects the servo data.).

However, Tuttle et al. does not explicitly teach wherein the preamble is detected using trigonometric identities. However, this limitation is taught by Moran et al. in Col. 23, L. 27-42. It would have been obvious to a person of ordinary skill in the art, at the time the invention was made, to modify Tuttle et al.'s invention with the teaching of Moran et al. in order to be able to detect the servo burst in order to align the head with the disk.

Apparatus claim (23) is drawn to the apparatus corresponding to the method of using same as claimed in claim (1). Therefore apparatus claim (23) corresponds to claims (1), and is rejected for the same reasons of obviousness as used above.

Claims (20 and 29) have limitations similar to those treated in the above rejection(s), and are met by the references as discussed above. Claim (20) however also recites the following limitations: "operable to detect the first and second portions of one of the servo wedges (Col. 4, L. 29-56 and Col. 15, L. 15-63, wherein Tuttle et al. teaches detecting an asynchronous servo wedge during the spin up operation (hence, it is detecting it "while the disk is attaining an operating speed" as described in the Claim). It is inherent in the art wherein there are numerous bit portions in the servo wedge, hence when the head is detecting the servo wedge, it has to detect all its bit portions in order to be able to detect the correct position)."

Regarding Claim 30, Tuttle et al. teaches a method wherein:

Rotating a data-storage disk having a surface from a first rotational speed to a second rotational speed over a first time period, the circumferential position of a read head relative to a location of the disk surface being unknown for at least a

portion of the first time period (Col. 4, Lines 29-56 and Col. 15, L. 15-63, wherein Tuttle et al. teaches a start up operation, which inherently starts form a first operating speed, to a second speed which eventually is the disk operating speed.);

During or after the first time period and while the circumferential position of the read head is unknown, detecting spin-up wedge, and after detecting the spin-up wedge, detecting a servo wedge that identifies a sector of the data-storage disk (Col. 15, L. 15-63, wherein Tuttle et al. teaches detecting an asynchronous servo wedge during the spin up operation (or spin-up wedge). It is known in the art that the servo contains data that pertains to the location of the head with respect to the disk. Tuttle further teaches that when the disk attains its operating seed, it detects the wedges synchronously therein.); and

Determining the circumferential position of the read head from the recovered sector location identifying data before detecting any other servo wedge (Col. 15, L. 23-30, wherein Tuttle et al. also teaches that once it starts detecting synchronously, it can determine its circumferential position within the disk because it is inherent that servo data contains positional information.).

However, Tuttle et al. does not explicitly teach wherein the preamble is detected using trigonometric identities. However, this limitation is taught by Moran et al. in Col. 23, L. 27-42. It would have been obvious to a person of ordinary skill in the art, at the time the invention was made, to modify Tuttle et al.'s invention with the teaching of Moran et al. in order to be able to detect the servo burst in order to align the head with the disk.

Regarding Claim 2, the combination of Tuttle et al. and Moran et al. teach all the limitations of Claims 1. Tuttle et al. further teach wherein the processor is operable to cause the servo channel to recover servo data from the first servo wedge after the processor detects the one servo wedge and before the servo channel recovers servo data from any other servo wedge (Pat. No. 6, 108, 151; Col. 4, Lines 29-56 and Col. 15, L. 15-63).

Regarding Claim 4, the combination of Tuttle et al. and Moran et al. teach all the limitations of Claim 1. Tuttle further teach the first servo wedge comprises a preamble and the processor is operable to detect the one servo wedge by detecting the preamble (Pat. No. 6, 108, 151; Fig. 2B and Col. 4, Lines 29-56 and Col. 15, L. 15-63).

Regarding Claim 6, the combination of Tuttle et al. and Moran et al. teach all the limitations of Claim 1. Tuttle further teach the first servo wedge comprises a preamble and a servo synchronization mark following the preamble; the processor is operable to detect the first servo wedge by detecting the preamble; and the servo channel is operable to recover the synchronization mark in response to the processor detecting the preamble (Pat. No. 6, 108, 151; Fig. 2B and Col. 4, Lines 29-56 and Col. 15, L. 15-63 and Also see Col. 15, L. 64 to Col. 17, L. 60).

Regarding Claim 7, the combination of Tuttle et al. and Moran et al. teach all the limitations of Claim 1. Tuttle et al. further teach the first servo wedge and a second servo wedge following the first servo wedge each comprise a preamble and a servo synchronization mark following the preamble; the processor is operable to detect the one servo wedge by detecting the preamble of the one servo wedge; the servo channel is operable to recover the synchronization mark of the first servo wedge in response to the processor detecting the preamble of the first

servo wedge; after detecting the first servo wedge, the processor is operable to detect the second servo wedge by detecting the preamble of the second servo wedge; and the servo channel is operable to recover the synchronization mark of the second servo wedge in response to the processor detecting the preamble of the second servo wedge (Pat. No. 6, 108, 151; Fig. 2B and Col. 4, Lines 29-56 and Col. 15, L. 15-63 and Also see Col. 15, L. 64 to Col. 17, L. 60. It is known to a person of ordinary skill in the art to know that the servo channel during will read more than one servo wedge when the disk is in a spinning operation.).

Regarding Claim 31, the combination of Tuttle et al. and Moran et al. teach all the limitations of Claim 30. Tuttle et al. further teach wherein the second rotational speed is a steady-state speed or is approximately a steady-state speed (Pat. No. 6, 108, 151; Col. 15, Lines 13-15. It is known to a person of ordinary skill in the art to know that in a disk after performing a spin-up operation, it eventually detects synchronously at a stable speed).

Regarding Claim 21, the combination of Tuttle et al. and Moran et al. teach all the limitations of Claim 20. Tuttle et al. further teaches detecting a first portion which is a spin-up wedge and a preamble (Element 5, wherein it is inherent that the able must be read in order to determine what sector the head is reading.).

Regarding Claim 22, the combination of Tuttle et al. and Moran et al. teach all the limitations of Claim 20. Tuttle et al. further teaches wherein the processor is operable to detect the first portion of the one servo wedge before detecting the second portion (Col. 15, L. 15-63).

3. Claims 3, 5, 9, 10-17, 24-28 and 32-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Tuttle et al. and Moran et al. as applied to claim 1, 23, 29 and 30 above, and further in view of Leis et al. (US Patent No. 5, 036, 408).

Regarding Claim 3, the combination of Tuttle et al. and Moran et al. teach all the limitations of Claim 1. Sacks et al. and Tuttle et al. do not explicitly teach wherein the first spin-up wedge comprises a zero-frequency field and the processor is operable to detect the first spin-up wedge by detecting the zero-frequency field. However, Leis et al. teaches a DC field placed in a sector (Pat. No. 5, 036, 408; See Abstract. It is known in the art that a dc or direct current signal has no frequency). It would have been obvious to a person of ordinary skill in the art, at the time the invention was made, to modify Tuttle et al.'s invention in order to control the position and synchronize the read/write head (Pat. No. 5, 036, 408; See Abstract).

Regarding Claim 5, the combination of Tuttle et al. and Moran et al. teach all the limitations of Claim 1. Tuttle et al. does not explicitly teach the first spin-up wedge comprises a zero-frequency field; the first servo wedge comprises a preamble that follows and that is contiguous with the zero-frequency field; and the processor is operable to detects the first spin-up wedge by detecting the zero-frequency field and is operable to detect the first servo wedge by detecting the preamble after detecting the zero-frequency field. However, Leis et al. teaches teach the first spin-up wedge comprises a zero-frequency field (Pat. No. 5, 036, 408, See Abstract); the first servo wedge comprises a preamble that follows and that is contiguous with the zero-frequency field (Pat. No. 5, 036, 408, See Abstract); and the processor is operable to detects the first spin-up wedge by detecting the zero-frequency field and is operable to detect the first servo wedge by detecting the preamble after detecting the zero-frequency field (Pat. No. 5, 036, 408, See Abstract and Fig. 3A, Step 108).

Regarding Claims 9 and 10, the combination of Tuttle et al. and Moran et al. teach all the limitations of Claim 1. Tuttle et al. does not explicitly teach the first spin-up wedge comprises a

zero-frequency field; the servo channel is operable to generate a zero-frequency or approximately zero-frequency read signal that represents the zero-frequency field and to sample the read signal; and the processor is operable to, compare samples of the read signal to a threshold, and detect the first spin-up wedge if a predetermined number of consecutive samples each have a predetermined relationship to the threshold. However, Leis et al., teaches teach the first spin-up wedge comprises a zero-frequency field (Pat. No. 5, 036, 408, See Abstract); the servo channel is operable to generate a zero-frequency or approximately zero-frequency read signal that represents the zero-frequency field and to sample the read signal (Pat. No. 5, 036, 408, See Abstract and Col. 3, Lines 55-57, which indicates data is being sampled. Leis et al. teach a servo control system used for positioning the head. It is obvious to a person of ordinary skill in the art that servo channels are used for that same purpose.) and the processor is operable to, compare samples of the read signal to a threshold, and search and detect the first spin-up wedge if a predetermined number of consecutive samples each have a predetermined relationship to the threshold (Pat. No. 5, 036, 408; Col. 7, Lines 1-50 and Fig. 3A, Step 104).

Regarding Claim 11, the combination of Tuttle et al. and Moran et al. teach all the limitations of Claims 1. Tuttle et al. does not explicitly teach wherein the first spin-up wedge is disposed within the first servo wedge. However, Leis et al. teaches wherein the first spin-up wedge is disposed within the first servo wedge (Pat. 5, 036, 408; Abstract).

Regarding Claims 12, 13, 14, 15, 16, 32, 33 and 34, the combination of Tuttle et al. teach all the limitations of Claims 1 and 30, respectively. The combination does not explicitly teach the first spin-up wedge comprises a zero-frequency field; the servo channel is operable to generate a zero-frequency or approximately zero-frequency read signal that represents the zero-

frequency field and to sample the read signal; and the processor is operable to, compare samples of the read signal to a threshold, and detect the first spin-up wedge if a predetermined number of consecutive samples each have a predetermined relationship to the threshold. However, Leis et al. teaches teach the first spin-up wedge comprises a zero-frequency field (Pat. No. 5, 036, 408, See Abstract); the servo channel is operable to generate a zero-frequency or approximately zero-frequency read signal that represents the zero-frequency field and to sample the read signal (Pat. No. 5, 036, 408, See Abstract and Col. 3, Lines 55-57, which indicates data is being sampled. Leis et al. teach a servo control system used for positioning the head. It is obvious to a person of ordinary skill in the art that servo channels are used for that same purpose.) and the processor is operable to, compare samples of the read signal to a threshold, and search and detect the preamble if a predetermined number of consecutive samples each have a predetermined relationship to the threshold (Pat. No. 5, 036, 408; Col. 7, Lines 1-50 and Fig. 3A, Step 108).

Regarding Claim 17, the combination of Tuttle et al. and Moran et al. teach all the limitations of Claim 1. Tuttle et al. does not explicitly teach the first spin-up wedge comprises a zero-frequency field; the first servo wedge comprises a preamble; the servo channel is operable to generate a zero-frequency or approximately zero-frequency read signal that represents the zero-frequency field and to sample the read signal; and the processor is operable to, compare samples of the read signal to a threshold, search for the preamble of the first servo wedge in response to a first predetermined number of consecutive samples that have a predetermined relationship to the threshold, and abort the search for the preamble of the first servo wedge if the processor does not detect the preamble within a second predetermined number of consecutive samples that immediately follow the first predetermined number of consecutive samples.

However, Leis et al. teach the first spin-up wedge comprises a zero-frequency field (Pat. No. 5, 036, 408, See Abstract); the first servo wedge comprises a preamble (Pat. No. 5, 036, 408, See Abstract); the servo channel is operable to generate a zero-frequency or approximately zero-frequency read signal that represents the zero-frequency field and to sample the read signal (Pat. No. 5, 036, 408, See Abstract and Col. 3, Lines 55-57, which indicates data is being sampled. Leis et al. teach a servo control system used for positioning the head. It is obvious to a person of ordinary skill in the art that servo channels are used for that same purpose.); and the processor is operable to, compare samples of the read signal to a threshold, search for the preamble of the first servo wedge in response to a first predetermined number of consecutive samples that have a predetermined relationship to the threshold, and abort the search for the preamble of the first servo wedge if the processor does not detect the preamble within a second predetermined number of consecutive samples that immediately follow the first predetermined number of consecutive samples (Pat. No. 5, 036, 408, Fig. 3A and Col. 7, Lines 1-50 and Fig. 3A).

Regarding Claim 24, the combination of Tuttle et al. and Moran et al. teach all the limitations of Claim 23. The combination does not explicitly teach wherein the servo channel is operable to recover the servo data from the detected servo wedge; and the servo circuit is operable to, determine an initial position of the read head from the recovered servo data, and provide the initial position to the read-head positioning circuit. However, Leis et al. teaches the servo channel is operable to recover the servo data from the detected servo wedge (Pat. No. 5, 036, 408; Col. 7, Lines 1-50 and Abstract); and the servo circuit is operable to, determine an initial position of the read head from the recovered servo data, and provide the initial position to the read-head positioning circuit (Pat. No. 5, 036, 408; Col. 7, Lines 1-50 and Abstract).

Regarding Claim 25, the combination of Tuttle et al. and Moran et al. teach all the limitations of Claim 23. The combination does not explicitly teach wherein the servo channel is operable to recover the servo data from the detected servo wedge and to provide the location of the respective data sector to the read-head positioning circuit. However, Leis et al. teaches wherein the servo channel is operable to recover the servo data from the detected servo wedge and to provide the location of the respective data sector to the read-head positioning circuit (Pat. No. 5, 036, 408; Col. 7, Lines 1-50 and Abstract. Leis et al. teach a servo control system used for positioning the head. It is obvious to a person of ordinary skill in the art that servo channels are used for that same purpose.).

Regarding Claim 26, the combination of Tuttle et al. and Moran et al. teach all the limitations of Claim 23. The combination of does not explicitly teach the servo channel is operable to recover the servo data from the detected servo wedge and to provide the location of the respective data sector to the read-head positioning circuit; and the read-head positioning circuit is operable to determine an initial position of the read head from the location of the respective data sector. However, this feature is well known in the art as disclosed by Leis et al., wherein it teaches the servo channel is operable to recover the servo data from the detected servo wedge and to provide the location of the respective data sector to the read-head positioning circuit (Pat. No. 5, 036, 408; Col. 7, Lines 1-50 and Abstract); and the read-head positioning circuit is operable to determine an initial position of the read head from the location of the respective data sector (Pat. No. 5, 036, 408; Col. 7, Lines 1-50 and Abstract).

Regarding Claim 27, the combination of Tuttle et al. and Moran et al. teach all the limitations of Claim 23. The combination does not explicitly teach wherein the read-head

position circuit and the servo circuit are unable to determine the position of the read head before the processor detects the one servo wedge. However, Leis et al. teaches the read-head position circuit and the servo circuit are unable to determine the position of the read head before the processor detects the one servo wedge (Pat. No. 5, 036, 408; See Abstract).

Regarding Claim 28, the combination of Tuttle et al. and Moran et al. teach all the limitations of Claim 23. The combination of does not explicitly teach wherein the read head comprises a read-write head. However, Leis et al. teaches wherein the read head comprises a read-write head (Pat. No. 5, 036, 408; See Abstract).

4. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tuttle et al. and Moran et al. as applied to claim 1 above, and further in view of Patapoutian et al. (US Patent No. 5, 661, 760). The combination of Tuttle et al. and Moran et al. teach all the limitations of Claim 1. The combination fail to teach wherein the servo wedge comprises a predetermined binary sequence having groups of no more and no fewer than a predetermined number of consecutive bits each having a first logic level, the groups separated from each other by respective bits having a second logic level; And the servo channel comprises a Viterbi detector that excludes state transitions that are excluded from the predetermined binary sequence. However, Patapoutian et al. teaches a first group of consecutive bits, the first group having first and second equally sized portions and representing a first logic level, the bits in the first portion each having a second logic level (Pat. No. 5, 661, 760; Col. 3, Lines 55-58. Patapoutian et al. teaches a ¼ coding scheme that codes binary ones into "--++" and binary zeros into "++--". It is inherent that if a sequence of for example "1011" ("10" being a first logic level and "11" being a second logic level) will be encoded into "--++++----++--++", having a first and second equally

sized portion in the first group ("--++" and "++--") having a second logic level ("1") and a third logic level ("0")) and a Viterbi detector operable to receive a signal that represents a binary sequence (Pat. No. 5, 661, 760; See Abstract). It would have been obvious to a person of ordinary skill in the art, at the time the invention was made, to modify Tuttle et al.'s invention in order to receive a binary sequence (Pat. No. 5, 661, 760; See Abstract).

Allowable Subject Matter

7. Claims 8, and 18 are allowed.

The reasons for allowance are found in the Office Action dated 02/23/06.

Response to Arguments

8. Applicant's arguments with respect to claims 1-3, 5-7, 9-17 and 19-34 have been considered but are moot in view of the new ground(s) of rejection.

9. Examiner acknowledges that Claims 4 and 35 have been cancelled in the Amendment filed by the Applicant on 5/23/06.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Glenda P. Rodriguez whose telephone number is (571) 272-7561. The examiner can normally be reached on Monday thru Thursday: 7:00-5:00; alternate Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wayne Young can be reached on (571) 272-7582. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

gpr
07/17/06.

WAYNE YOUNG
SUPERVISORY PATENT EXAMINER